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1 [Implementing sorting in database systems](#)



Goetz Graefe

 September 2006 **ACM Computing Surveys (CSUR)**, Volume 38 Issue 3

Publisher: ACM Press

 Full text available: pdf(518.63 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Most commercial database systems do (or should) exploit many sorting techniques that are publicly known, but not readily available in the research literature. These techniques improve both sort performance on modern computer systems and the ability to adapt gracefully to resource fluctuations in multiuser operations. This survey collects many of these techniques for easy reference by students, researchers, and product developers. It covers in-memory sorting, disk-based external sorting, and cons ...

Keywords: Key normalization, asynchronous read-ahead, compression, dynamic memory resource allocation, forecasting, graceful degradation, index operations, key conditioning, nested iteration

2 [Compression techniques for fast external sorting](#)

John Yiannis, Justin Zobel

 April 2007 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 16 Issue 2

Publisher: Springer-Verlag New York, Inc.

 Full text available: pdf(433.12 KB) Additional Information: [full citation](#), [abstract](#)

External sorting of large files of records involves use of disk space to store temporary files, processing time for sorting, and transfer time between CPU, cache, memory, and disk. Compression can reduce disk and transfer costs, and, in the case of external sorts, cut merge costs by reducing the number of runs. It is therefore plausible that overall costs of external sorting could be reduced through use of compression. In this paper, we propose new compression techniques for data consisting of se ...

Keywords: External sorting, Query evaluation, Semi-static compression, Sorting

3 [Parallel applications: Toward terabyte pattern mining: an architecture-conscious solution](#)



Gregory Buehrer, Srinivasan Parthasarathy, Shirish Tatikonda, Tahsin Kurc, Joel Saltz

MR



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| 18 | BRS | L26 | 0 | L6 and (strip\$3 and ((minimum or minimal) same (intersect\$3 or overlap\$4) same decod\$3)) | US-PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |
| 19 | BRS | L27 | 3 | (RAID and ((minimum or minimal) same (intersect\$3 or overlap\$4) same decod\$3)) | US-PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |
| 20 | BRS | L21 | 50 | (strip\$3 and ((minimum or minimal) same (intersect\$3 or overlap\$4) same decod\$3)) | US-PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |

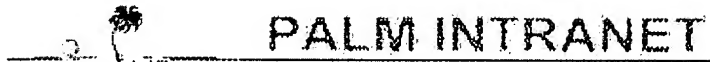
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| 21 | BRS | L8 | 92 | RAID and strip\$3 and ((group or quorum or fail\$3) same (intersect\$3 or overlap\$4)) and decod\$3 | US- PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |
| 22 | BRS | L24 | 2 | L4 and (strip\$3 and ((minimum or minimal) same (intersect\$3 or overlap\$4) same decod\$3)) | US- PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |
| 23 | BRS | L22 | 2 | L2 and (strip\$3 and ((minimum or minimal) same (intersect\$3 or overlap\$4) same decod\$3)) | US- PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |
| 24 | BRS | L15 | 170 | (strip\$3 and ((group or quorum or fail\$3) same (intersect\$3 or overlap\$4) same decod\$3)) | US- PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |

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| 25 | BRS | L13 | 1 | L5 and RAID and strip\$3 and ((group or quorum or fail\$3) same (intersect\$3 or overlap\$4)) and decod\$3 | US-PGPUB; USPAT; EPO; JPO; DERWE NT; IBM_T DB |
| 26 | BRS | L12 | 6 | L4 and RAID and strip\$3 and ((group or quorum or fail\$3) same (intersect\$3 or overlap\$4)) and decod\$3 | US-PGPUB; USPAT; EPO; JPO; DERWE NT; IBM_T DB |
| 27 | BRS | L10 | 4 | L2 and RAID and strip\$3 and ((group or quorum or fail\$3) same (intersect\$3 or overlap\$4)) and decod\$3 | US-PGPUB; USPAT; EPO; JPO; DERWE NT; IBM_T DB |
| 28 | BRS | L28 | 2672 | 711/114.ccls. | US-PGPUB; USPAT; EPO; JPO; DERWE NT; IBM_T DB |

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| 29 | BRS | L29 | 72 | strip\$3 same (eras\$3 near3 cod\$3) | US- PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |
| 30 | BRS | L32 | 162 | strip\$3 same (parity near3 cod\$3) | US- PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |
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| 35 | BRS | L30 | 2 | L28 and L29 | US- PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |
| 36 | BRS | L31 | 72 | strip\$3 same (eras\$3 near3 cod\$3) | US- PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |

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| 37 | BRS | L35 | 100 | strip\$3 same (parity near3 cod\$3) same (writ\$3 or stor\$3) | US- PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |
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| 39 | BRS | L39 | 2 | "5740465".pn. | US- PGPUB ; USPAT ; EPO; JPO; DERWE NT; IBM_T DB |



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1 [FAB: building distributed enterprise disk arrays from commodity components](#)



Yasushi Saito, Svend Frølund, Alistair Veitch, Arif Merchant, Susan Spence

 October 2004 **ACM SIGARCH Computer Architecture News , ACM SIGOPS Operating Systems Review , ACM SIGPLAN Notices , Proceedings of the 11th international conference on Architectural support for programming languages and operating systems ASPLOS-XI**, Volume 32 , 38 , 39 Issue 5 , 5 , 11

Publisher: ACM Press

 Full text available: pdf(671.67 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This paper describes the design, implementation, and evaluation of a Federated Array of Bricks (FAB), a distributed disk array that provides the reliability of traditional enterprise arrays with lower cost and better scalability. FAB is built from a collection of *bricks*, small storage appliances containing commodity disks, CPU, NVRAM, and network interface cards. FAB deploys a new majority-voting-based algorithm to replicate or erasure-code logical blocks across bricks and a reconfigurati ...

Keywords: consensus, disk array, erasure coding, replication, storage, voting

2 [Antiquity: exploiting a secure log for wide-area distributed storage](#)



Hakim Weatherspoon, Patrick Eaton, Byung-Gon Chun, John Kubiawicz

 March 2007 **ACM SIGOPS Operating Systems Review , Proceedings of the 2007 conference on EuroSys EuroSys '07**, Volume 41 Issue 3

Publisher: ACM Press

 Full text available: pdf(584.64 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Antiquity is a wide-area distributed storage system designed to provide a simple storage service for applications like file systems and back-up. The design assumes that all servers eventually fail and attempts to maintain data despite those failures. Antiquity uses a secure log to maintain data integrity, replicates each log on multiple servers for durability, and uses dynamic Byzantine fault-tolerant quorum protocols to ensure consistency among replicas. We present Antiquity's design and an ...

Keywords: archival storage systems, data durability, data integrity, distributed storage system, wide-area

3 [Recovery in the Calypso file system](#)



Murthy Devarakonda, Bill Kish, Ajay Mohindra
August 1996 **ACM Transactions on Computer Systems (TOCS)**, Volume 14 Issue 3

Publisher: ACM Press

Full text available: pdf(318.88 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This article presents the design and implementation of the recovery scheme in Calypso. Calypso is a cluster-optimized, distributed file system for UNIX clusters. As in Sprite and AFS, Calypso servers are stateful and scale well to a large number of clients. The recovery scheme in Calypso is nondisruptive, meaning that open files remain open, client modified data are saved, and in-flight operations are properly handled across server recover. The scheme uses distributed state amount the client ...

Keywords: Calypso, cluster systems, distributed state, state reconstruction

4 Feasibility of a serverless distributed file system deployed on an existing set of desktop PCs



William J. Bolosky, John R. Douceur, David Ely, Marvin Theimer
June 2000 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 2000 ACM SIGMETRICS international conference on Measurement and modeling of computer systems SIGMETRICS '00**, Volume 28 Issue 1

Publisher: ACM Press

Full text available: pdf(946.00 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We consider an architecture for a serverless distributed file system that does not assume mutual trust among the client computers. The system provides security, availability, and reliability by distributing multiple encrypted replicas of each file among the client machines. To assess the feasibility of deploying this system on an existing desktop infrastructure, we measure and analyze a large set of client machines in a commercial environment. In particular, we measure and report results on ...

Keywords: analytical modeling, availability, feasibility analysis, personal computer usage data, reliability, security, serverless distributed file system architecture, trust, workload characterization

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